

## Claims

What is claimed is:

1        1. A method for creating customized mesh planes in electronic  
2 packages comprising the steps of:

3              receiving electronic package physical design data;

4              comparing signal traces in each adjacent plane to a mesh plane with  
5 a mesh layout of the mesh plane;

6              identifying signal traces adjacent to mesh holes in the mesh layout;

7              selecting a fill method to replace selected mesh holes with added

8 mesh structure aligned with the identified signal traces.

1        2. A method for creating customized mesh planes as recited in  
2 claim 1 wherein the step of selecting said fill method includes the steps of  
3 providing a plurality of fill methods, said fill methods including selected ones  
4 of a crosshair fill method, a single line fill method, a signal mirror fill method,  
5 a mesh shifting fill method, a corner fill method, and a complete fill method;  
6 and selecting one or a combination of said fill methods.

1        3. A method for creating customized mesh planes as recited in  
2 claim 1 wherein the step of selecting said fill method includes selecting a  
3 crosshair fill method to replace selected mesh holes with a crosshair mesh  
4 structure aligned with the identified signal traces.

1        4. A method for creating customized mesh planes as recited in  
2 claim 1 wherein the step of selecting said fill method includes selecting a  
3 single line fill method to replace selected mesh holes with a single line mesh  
4 structure aligned with the identified signal traces.

1        5. A method for creating customized mesh planes as recited in  
2 claim 1 wherein the step of selecting said fill method includes selecting a  
3 corner fill method to replace selected mesh holes with a corner fill mesh  
4 structure aligned with the identified signal traces.

1       6. A method for creating customized mesh planes as recited in  
2 claim 1 wherein the step of selecting said fill method includes selecting a  
3 complete fill method to replace selected mesh holes with a complete fill  
4 mesh structure aligned with the identified signal traces.

1       7. A method for creating customized mesh planes as recited in  
2 claim 1 wherein the step of selecting said fill method includes selecting a  
3 signal mirror fill method to replace selected mesh holes with a signal mirror  
4 mesh structure substantially aligned with all of the signal traces.

1       8. A method for creating customized mesh planes as recited in  
2 claim 1 wherein the step of selecting said fill method includes selecting a  
3 crosshair fill method to replace selected mesh holes with a crosshair mesh  
4 structure aligned with the identified signal traces; and a single line fill method  
5 to replace other selected mesh holes with a single line mesh structure  
6 aligned with the identified signal traces.

1       9. A customized mesh plane created by comparing signal traces  
2 in each adjacent plane to a mesh plane with a mesh layout; and identifying  
3 signal traces adjacent to mesh holes in the mesh layout comprising:

4           a grid mesh plane defined by a plurality of uniformly spaced apart  
5 horizontal mesh traces and a plurality of uniformly spaced apart vertical  
6 mesh traces; and

7           a selected fill structure added to the mesh plane replacing selected  
8 mesh holes adjacent to the identified signal traces.

1       10. A customized mesh plane as recited in claim 9 wherein said  
2 selected fill structure includes at least one of a crosshair mesh structure, a  
3 single line mesh structure, a signal mirror mesh structure, a mesh shifting  
4 mesh structure, a corner mesh structure, and a complete mesh structure.

1           11. A computer program product for creating customized mesh  
2 planes in electronic packages in a computer system, said computer program  
3 product including instructions executed by the computer system to cause the  
4 computer system to perform the steps of:  
5           receiving electronic package physical design data;  
6           comparing signal traces in each adjacent plane to a mesh plane with  
7 the mesh layout;  
8           identifying signal traces adjacent to mesh holes in the mesh layout;  
9           selecting a fill method to replace selected mesh holes with added  
10 mesh structure aligned with the identified signal traces.

1           12. A computer program product for creating customized mesh  
2 planes as recited in claim 11 includes the step of storing said fill method,  
3 said fill method including selected ones of a crosshair fill method, a single  
4 line fill method, a signal mirror fill method, a mesh shifting fill method, a  
5 corner fill method, and a complete fill method.

1           13. A computer program product for creating customized mesh  
2 planes as recited in claim 12 wherein the step of selecting said fill method  
3 includes the steps of selecting one or a combination of said stored fill  
4 methods.

1           14. A computer program product for creating customized mesh  
2 planes as recited in claim 12 wherein the step of selecting said fill method  
3 includes the steps of storing manufacturing design rules, and selecting said  
4 fill method responsive to said stored manufacturing design rules.